

46. (Amended) A memory media comprising program instructions for creating a data base representing a virtual world, wherein the program instructions are executable to implement:

receiving a plurality of polygon representations of a plurality of virtual objects including a first virtual object, a second virtual object, and a third virtual object;

selecting the first and second virtual objects from said plurality of polygon representations of virtual objects using edges of the virtual objects;

grouping the first and second virtual objects into a three-dimensional grouped object represented by at least one of the following:

a three-dimensional and rotatable wireframe object, and

a three-dimensional and rotatable polygon object;

assigning a grouping hierarchy for the first and second virtual objects, wherein the second virtual object is assigned as the child of the first virtual object; and

calculating an orientation and position of the child object relative to the first virtual object.

69. (Amended) A method for creating a data base representing a virtual world, the method comprising:

receiving a plurality of polygon representations of virtual objects, wherein the plurality of polygon representations include a first, a second, and a third representation of respective first, second, and third virtual objects, wherein the virtual objects have edges;

selecting first and second virtual objects using the edges from said plurality of polygon representations of virtual objects;

grouping the first and second virtual objects into a grouped object comprising a combination of the first and second virtual objects, wherein the first and second virtual objects intersect; and

representing the grouped object by at least one of the following:

a three-dimensional and rotatable wireframe object, and

a three-dimensional and rotatable sweep polygon object.

84. (Amended) A computer program for creating a virtual world data base, wherein said computer program is embodied on computer-readable media and comprises instructions configured to:

read polygon representations of a plurality of virtual objects, including a first virtual object, a second virtual object, and a third virtual object;

select the first virtual object and the second virtual object from said plurality of virtual objects;

assign attributes to the first and second virtual objects;

group said first and second virtual objects into a grouped object, wherein said first and second virtual objects intersect;

represent the grouped object by at least one of the following:

a three-dimensional and rotatable wireframe object, and

a three-dimensional and rotatable polygon object;

assign a grouping hierarchy to the first and second virtual objects, wherein the second virtual object is assigned as the child of the first virtual object; and

calculate an orientation and position of the child object relative to the first virtual object.

97. (Amended) An apparatus for creating a virtual world data base, comprising:

a receiving means for receiving first and second polygon representations of respective first and second virtual objects in a virtual world;

a selecting means coupled to said receiving means and configured to select said first and second virtual objects by selecting one edge from each of said first and second virtual objects;

a grouping means coupled to said receiving means and selecting means, wherein said grouping means is configured to group said first and second virtual objects into a grouped object, wherein the grouped object is represented by at least one of a three-dimensional and rotatable wireframe object and a three dimensional and rotatable polygon object; and

an attribute assigning means coupled to said grouping means, wherein said assigning means is configured to assign an attribute to the first and second virtual objects, wherein the attribute assigning means comprises a hierarchy means for assigning a grouping hierarchy to the first and second virtual objects, wherein the second virtual object is assigned as a child object of the first virtual object, and wherein an orientation and a position of the child object is calculated relative to the first virtual object, wherein said attribute assigning means further comprises:

24 an origin assigning means for assigning an origin on the first virtual object around which a third virtual object can rotate, wherein said third virtual object is selected by said selecting means from said plurality of virtual objects; and

a constraint assigning means for assigning a three-dimensional constraint of motion to the third virtual object to constrain how the third virtual object can rotate with respect to the first virtual object.

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102. (Amended) A computer program embodied on a computer-readable medium, wherein the computer program is configured to create a data base representing a virtual world by:

receiving a plurality of polygon representations of virtual objects;

selecting first and second virtual objects from said plurality of polygon representations of virtual objects;

25 grouping the first and second virtual objects into a hierarchical grouped object, wherein said grouping includes:

selecting a first mathematical edge of said first virtual object;

selecting a second mathematical edge of said second virtual object; and

representing the grouped object by at least one of the following:

a three-dimensional and rotatable hierarchical wireframe object, and

a three-dimensional and rotatable hierarchical polygon object.

103. (Amended) The medium of claim 102, wherein said first and second mathematical edges are single points.

104. (Amended) The medium of claim 102, wherein said first and second mathematical edges are detached from said first and second virtual objects.

105. (Amended) The medium of claim 102, wherein the first and second virtual objects intersect, and wherein the grouped object comprises said first and second virtual objects joined with at least a portion of said first edge of said first virtual object contacting at least a portion of said second edge of said second virtual object.

106. (Amended) The medium of claim 102, further comprising: